J/ψ suppression: gluonic dissociation *vs.* colour screening

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Abstract

We evaluate the suppression of J/ψ production in an equilibrating quark gluon plasma for two competing mechanisms: Debye screening of colour interaction and dissociation due to energetic gluons. Results are obtained for $S+S$ and $Au+Au$ collisions at RHIC and LHC energies. At RHIC energies the gluonic dissociation of the charmonium is found to be equally important for both the systems while the screening of the interaction plays a significant role only for the larger systems. At LHC energies the Debye mechanism is found to dominate for both the systems. While considering the suppression of directly produced Υ at LHC energies, we find that only the gluonic dissociation mechanism comes into play for the initial conditions taken from the self screened parton cascade model in these studies. Thus we find that a systematic study of quarkonium suppression for systems of varying dimensions can help identify the source and the extent of the suppression.

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